

REMARKS

Claims 1-24 and 26 are pending. Claims 1-16 are withdrawn from consideration as being drawn to a non-elected invention. By this Amendment, claims 17, 18 and 26 are amended. Reconsideration in view of the following remarks is respectfully requested.

As discussed in the previous response, the article by Chen et al. lists as authors four of the five inventors of the instant application. The inventors include George Chen, Milo Shaffer, Derek Fray and Alan Windle. The remaining authors of the article, Gemma Dixon, Dan Coleby and Wuzong Zhou, did not contribute to the conception of the invention claimed in the instant application. A Declaration of the inventors under 37 C.F.R. §1.132 is attached hereto that establishes that the disclosure of the article was derived from the inventors of the instant application. Accordingly, the Chen et al. article is not “by another” and is not prior art under 35 U.S.C. §102(a).

As indicated in the addendum to the signature page of Dr. Milo Shaffer, the term “electrochemically” in paragraph 8 of the Declaration was inadvertently included as “electromechanically.” However, as discussed in the Declaration, Dan Coleby conducted experiments at the direction of George Zheng Chen and did not contribute to the conception of claims 17-24 and 26.

Reconsideration and withdrawal of the rejections based on Chen et al. are respectfully requested.

Claim 17 was rejected under 35 U.S.C. §102(b) over Fan et al. (Synthetic Metals, 1999). The rejection is respectfully traversed.

Claim 17 recites an electronically conducting polymer/carbon nanotube composite produced by preparing a dispersion of carbon nanotubes in a solution of one or more polymerisable monomers which upon polymerization form an electronically conducting polymer and polymerising the monomer solution by electro polymerization to form a unitary polymer mass containing discrete nanotubes individually coated in the electronically conducting polymer dispersed therein.

With respect to the Examiner's comments on page 5, lines 13-15, of the Office Action that there is not seen to be a difference between the process limitations of claim 17 and the process employed by Fan et al., as discussed above claim 17 recites polymerising the monomer solution by electro polymerization to form a unitary polymer mass. Fan et al. disclose a chemical polymerization method using $(\text{NH}_4)_2\text{S}_2\text{O}_8$ as an oxidant. See the

“Experimental” section on page 1266 of Fan et al. The use of a electro polymerization method as recited in claim 17 results in a structural difference from the use of a chemical polymerization method as disclosed by Fan et al. See MPEP § 2113, which states: “The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product.” (Underlining emphasis added.)

As discussed in the previous response, and on page 3 of the instant application, the method employed by Fan et al. produces a powder and is not suitable for the production of electronically conductive polymer/nanotube composites as a unitary or unified polymer mass. With respect to the Examiner's conclusion that Fan et al. anticipate claim 17 because each particle in the powder can be considered its own unitary polymer mass, it is respectfully submitted that even accepting this interpretation of Fan et al. as accurate, which Applicants do not, it is clear that the electronically conducting polymer/carbon nanotube composite of claim 17 is structurally different from the carbon nanotube-polypyrrole composites of Fan et al.

For example, as disclosed in Example 8 and as discussed in the June 29, 2004 response, the composite of claim 17 is a film having a nanoporous composite structure in which nanotubes are coated by a continuous layer of conducting polymer. The composite of Fan et al. is clearly a powder, as discussed above, and as evidenced by Fan et al.'s disclosure of disclosure of measuring the conductivity of pressed pellets. If the composite of Fan et al. were a unitary polymer mass, it would not have been necessary to prepare pressed pellets to measure its conductivity.

It is also respectfully noted that claim 17 recites that the unitary polymer mass contains discrete nanotubes individually coated in the electronically conducting polymer dispersed therein. Even assuming that each powder particle of the composite of Fan et al. were a “unitary polymer mass,” such an interpretation would not anticipate claim 17 as each powder particle would not include discrete nanotubes individually coated in the electronically conducting polymer dispersed therein.

With respect to the Examiner's conclusion on page 5, lines 10-11, that “each particle would contain plural nanotubes since the size of each coated tube is disclosed as 80-100 nm. too small for one nanotube to constitute a particle,” Applicants respectfully disagree. As

disclosed by Fan et al., Figure 1 is a single nanotube coated with a layer of polymer. Reconsideration and withdrawal of the rejection of claim 17 over Fan et al. is respectfully requested.

Reconsideration and withdrawal of the rejection of claim 17 over Fan et al. are respectfully requested.

Claims 18-24 and 26 were rejected under 35 U.S.C. §103(a) over Niu (U.S. Patent 6,205,016) in view of Chen et al. or Fan et al. The rejection is respectfully traversed.

As discussed above, Chen et al. do not qualify as prior art. Accordingly, no further response with respect to the Chen et al. article is necessary.

Claim 18 recites an electrical energy storage device comprising a first electrode consisting of a first composite of carbon nanotubes and a first electronically conducting polymer and a first conducting member in contact with the first composite. The storage device also includes a second electrode and an electrolyte comprising mobile cations and anions. The electrolyte separates the first and second electrodes and is in contact with the first composite. The first composite consists of a unitary polymer mass containing discrete carbon nanotubes individually coated in the electronically conducting polymer dispersed therein and is formed by preparing a dispersion of carbon nanotubes in a solution of one or more polymerisable monomers which upon polymerization form an electronically conducting polymer and polymerising the monomer solution by electro polymerization to form the unitary polymer mass.

It is respectfully submitted that the combination of Niu and Fan et al. fails to disclose all the limitations of claim 18. In particular it is respectfully submitted that neither Niu nor Fan et al. disclose or suggest polymerising the monomer solution by electro polymerization to form the unitary polymer mass. As discussed above, Fan et al. disclose chemical polymerization. Niu discloses a method of making a composite from a pre-formed polymer. See column 9 of Niu. As the combination fails to disclose or suggest all the limitations of claim 18, the combination fails to present a *prima facie* case of obviousness.

Applicants respectfully disagree with the Examiner's conclusion that an ordinary artisan "would be sufficiently skilled" to manipulate the relative amounts of polypyrrole monomer and carbon nanotubes in the method of Fan et al. to result in a unitary composite that possesses the properties identified by Niu. As discussed above, it is the method of polymerization which results in the composite as claimed, not the relative amount of reactants. Accordingly, it would be necessary to change the method of polymerisation used

by Fan et al. from chemical polymerisation to electro polymerisation, not the relative amount of reactants, to arrive at the claimed invention. As there is no disclosure or suggestion by Fan et al. (who disclose chemical polymerisation) or Niu (who discloses pre-formed polymers) of electro polymerisation, one of ordinary skill would not have been motivated to combine the references.

It is also respectfully noted that MPEP § 2143.01 IV states: "A statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art' at the time the claimed invention was made' because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references." (Underlining emphasis in original.) It is further respectfully noted that in the instant case the references relied upon do not teach all aspects of the claimed invention as neither Niu nor Fan et al. disclose or suggest polymerising the monomer solution by electro polymerisation to form a unitary polymer mass.

Claims 19-24 recite additional features of the invention and are allowable for the discussed above with respect to claim 18.

Claim 26 recites an electrical energy storage device comprising, *inter alia*, a first electrode comprising a first composite and a second electrode comprising a second composite. Each of the first and second composites consists of a unitary polymer mass containing discrete carbon nanotubes individually coated in the electronically conducting polymer dispersed therein and formed by preparing dispersion of carbon nanotubes in a solution of one or more polymerisable monomers which upon polymerization form an electronically conducting polymer and polymerising the monomer solution by electro polymerisation to form a unitary polymer mass.

It is respectfully submitted that the combination of Niu and Fan et al. fails to include all the limitations of claim 26, in particular polymerizing the monomer solution by electro polymerisation. It is also respectfully submitted that there is no motivation or suggestion to combine Niu and Fan et al. and there is no reasonable expectation of success for the combination.


Reconsideration of withdrawal of the rejection of claims 18-24 and 26 over Niu in view Fan et al. are respectfully requested.

In view of the above remarks, Applicants respectfully submit that all the claims are allowable and that the entire application is condition for allowance.

Should the Examiner believe that anything further is desirable to place the application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

PILLSBURY WINTHROP SHAW PITTMAN LLP



JOHN P. DARLING

Reg. No. 44482

Tel. No. (703) 770-7745

Fax No. (703) 770-7901

Date: February 27, 2006

P.O. Box 10500
McLean, VA 22102
(703) 770-7900

Attachment:

Rule 132 Declaration